

IN THE CLAIMS

Applicant amends the Claims as follows:

4. (Amended) The method of claim 3 wherein [the modulating step],
the modulation index is equal to a fraction selected from a
group consisting of $1/M$ and $1-1/M$ fractions for the M-ary symbol
set where $M=2^k$ and k is an integer.

5. (Amended) A method for communicating a data stream, the method
comprising the steps of,

generating a sequence of data symbols from the data stream by
formatting the data stream into the sequence of formatted data
pulses as a sequence of data symbols within a[n] 2-ary symbol set,
precoding the sequence of data symbols into a sequence of
precoded data symbols,

Gaussian filtering the precoded sequence of data symbols into
pulse responses continuously accumulated over a finite memory time
as a filter response, the Gaussian filtering is defined by a
bandwidth time product inversely defining the finite memory time,

1 frequency modulating a carrier reference by the filter
2 response by a modulation index for converting the filter response
3 into [the] a continuous phase modulated signal,
4 demodulating the continuous phase modulated signal by a local
5 carrier and by a carrier phase offset into a received baseband
6 signal, and
7 matched filtering the received baseband signal into a filtered
8 signal, the matched filtering is matched by pulse amplitude
9 modulation representation to the Gaussian filtering, the filtered
10 signal has an absolute phase at a periodic sampling time for
11 indicating the sequence of symbols.

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13 6. (Amended) The method of claim 5, wherein,

14 the sequence of data symbols has a data symbol d_n at a current
15 symbol time n where n is an integer and has a data symbol d_{n-1} at an
16 immediate previous symbol time $n-1$ for precoding the data sequence
17 into the sequence precoded data symbols having a precoded data
18 symbol α_n at the current symbol time, the precoding step is defined
19 by $\alpha_n = [d_n - d_{n-1} + 1]_{\text{mod}4}$.

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21 7. (Amended) The method of claim 5, wherein,

22 the sequence of data symbols has a data symbol d_n at a current
23 symbol time n where n is an integer and has a data symbol d_{n-1} at an

1 immediate previous symbol time $n-1$ for precoding the data sequence
2 into the sequence of precoded data symbols having a precoded data
3 symbol α_n at the current symbol time for even symbol times and for
4 odd symbol times, the precoding step is defined by $\alpha_n = [d_n - d_{n-1}$
5 $+ 1]_{\text{mod}4}$ for even symbol times and $\alpha_n = -[d_n - d_{n-1} + 1]_{\text{mod}4}$ for
6 odd symbol times.

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8 11. (Amended) A method for communicating a data stream, the method
9 comprising the steps of,

10 generating a sequence of data symbols from the data stream by
11 formatting the data stream into the sequence of formatted data
12 pulses as a sequence of data symbols within a $[n]$ 4-ary symbol set,
13 precoding the sequence of data symbols into a sequence of
14 precoded data symbols,

15 Gaussian filtering the precoded sequence of data symbols into
16 pulse responses continuously accumulated over a finite memory time
17 as a filter response, the Gaussian filtering is defined by a
18 bandwidth time product inversely defining the finite memory time,

19 frequency modulating a carrier reference by the filter
20 response by a modulation index for converting the filter response
21 into [the] a continuous phase modulated signal,

22 demodulating the continuous phase modulated signal by a local
23 carrier and by a carrier phase offset into a received baseband
24 signal, and

1 matched filtering the received baseband signal into a filtered
2 signal, the matched filtering is matched by pulse amplitude
3 modulation representation to the Gaussian filtering, the filtered
4 signal has an absolute phase at a periodic sampling time for
5 indicating the sequence of symbols.

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7 12. (Amended) The method of claim 11, wherein,

8 the sequence of data symbols has a data symbol d_n at a current
9 symbol time n where n is an integer and has a data symbol d_{n-1} at an
10 immediate previous symbol time $n-1$ for precoding the data sequence
11 into the sequence precoded data symbols having a precoded data
12 symbol α_n at the current symbol time, the precoding step is defined
13 by $\alpha_n = [d_n - d_{n-1} + 1]_{\text{mod}8}$.

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15 15. (Amended) The method of claim 11, wherein,

16 the sequence of data symbols has a data symbol d_n at a current
17 symbol time n where n is an integer and has a data symbol d_{n-1} at an
18 immediate previous symbol time $n-1$ for precoding the data sequence
19 into the sequence precoded data symbols having a precoded data
20 symbol α_n at the current symbol time, the precoding step is defined
21 by $\alpha_n = [d_n - d_{n-1} + 3]_{\text{mod}8}$.

1 18. (Amended) The method of claim 11 [wherein 10] wherein the
2 filtering step is a matched filtering step for applying a principal
3 Laurent function, a third Laurent function and a twelfth Laurent
4 function to the baseband signal so that the filtered signal
5 comprises a principal Laurent component, a third Laurent component
6 and a twelfth Laurent component.

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8 AMENDED and REWRITTEN
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10 4. (Amended and Rewritten) The method of claim 3 wherein,
11 the modulation index is equal to a fraction selected from a
12 group consisting of $1/M$ and $1-1/M$ fractions for the M-ary symbol
13 set where $M=2^k$ and k is an integer.

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16 5. (Amended and Rewritten) A method for communicating a data
17 stream, the method comprising the steps of,
18 generating a sequence of data symbols from the data stream by
19 formatting the data stream into the sequence of formatted data
20 pulses as a sequence of data symbols within a 2-ary symbol set,
21 precoding the sequence of data symbols into a sequence of
22 precoded data symbols,

23 Gaussian filtering the precoded sequence of data symbols into
24 pulse responses continuously accumulated over a finite memory time

1 as a filter response, the Gaussian filtering is defined by a
2 bandwidth time product inversely defining the finite memory time,
3 frequency modulating a carrier reference by the filter
4 response by a modulation index for converting the filter response
5 into a continuous phase modulated signal,
6 demodulating the continuous phase modulated signal by a local
7 carrier and by a carrier phase offset into a received baseband
8 signal, and
9 matched filtering the received baseband signal into a filtered
10 signal, the matched filtering is matched by pulse amplitude
11 modulation representation to the Gaussian filtering, the filtered
12 signal has an absolute phase at a periodic sampling time for
13 indicating the sequence of symbols.

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17 6. (Amended and Rewritten) The method of claim 5, wherein,

18 the sequence of data symbols has a data symbol d_n at a current
19 symbol time n where n is an integer and has a data symbol d_{n-1} at an
20 immediate previous symbol time $n-1$ for precoding the data sequence
21 into the sequence precoded data symbols having a precoded data
22 symbol α_n at the current symbol time, the precoding step is defined
23 by $\alpha_n = [d_n - d_{n-1} + 1]_{\text{mod}4}$.

7. (Amended and Rewritten) The method of claim 5, wherein,
the sequence of data symbols has a data symbol d_n at a current
symbol time n where n is an integer and has a data symbol d_{n-1} at an
immediate previous symbol time $n-1$ for precoding the data sequence
into the sequence of precoded data symbols having a precoded data
symbol α_n at the current symbol time for even symbol times and for
odd symbol times, the precoding step is defined by $\alpha_n = [d_n - d_{n-1}$
 $+ 1]_{\text{mod}4}$ for even symbol times and $\alpha_n = -[d_n - d_{n-1} + 1]_{\text{mod}4}$ for
odd symbol times.

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11. (Amended and Rewritten) A method for communicating a data
stream, the method comprising the steps of,
generating a sequence of data symbols from the data stream by
formatting the data stream into the sequence of formatted data
pulses as a sequence of data symbols within a $[n]$ 4-ary symbol set,
precoding the sequence of data symbols into a sequence of
precoded data symbols,
Gaussian filtering the precoded sequence of data symbols into
pulse responses continuously accumulated over a finite memory time
as a filter response, the Gaussian filtering is defined by a
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8 signal, the matched filtering is matched by pulse amplitude
9 modulation representation to the Gaussian filtering, the filtered
10 signal has an absolute phase at a periodic sampling time for
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13 12. (Amended and Rewritten) The method of claim 11, wherein,

14 the sequence of data symbols has a data symbol d_n at a current
15 symbol time n where n is an integer and has a data symbol d_{n-1} at an
16 immediate previous symbol time $n-1$ for precoding the data sequence
17 into the sequence precoded data symbols having a precoded data
18 symbol α_n at the current symbol time, the precoding step is defined
19 by $\alpha_n = [d_n - d_{n-1} + 1]_{\text{mod}8}$.

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